

determining whether there are any print jobs that have not been printed based on the job status information stored in the non-volatile memory;

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Art*
resend request issuing means for requesting the terminal device that sent the image data of any print job that has not been printed to resend the image data for storing in the volatile memory; and

a controller which, when power is restored to said volatile memory after being interrupted and the determining means determines that there are any print jobs that have not been printed, clears the respective image data address in the non-volatile memory prior to the image data being resent by the corresponding terminal device.

REMARKS

In response to the Office Action dated March 14, 2001, claims 1, 9, 13 and 15 are amended, claims 7, 8 and 14 are canceled, and claim 16 is added. Claims 1-6, 9-14 and 16 are now active in this application. No new matter has been added.

REJECTION OF CLAIMS UNDER 35 U.S.C. § 102 AND § 103

Claims 7, 8 and 14 are rejected under 35 U.S.C. § 102(e) as being anticipated by Tamagaki.

The rejection is moot as claims 7, 8 and 14 are canceled.

Claims 1-6, 9-13 and 15 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Tamagaki in view of Bender et al. (hereinafter, Bender). The Examiner admits that Tamagaki does not teach a non-volatile memory which stores processing status information of print jobs, but contends that Bender teaches a non-volatile memory which

stores processing status information of print jobs, referring to column 4, lines 61-67. Thus, the Examiner maintains that it would have been obvious to a person of ordinary skill in the art to have modified the system of Tamagaki for storing processing status information of print jobs by a non-volatile memory as taught by Bender.

The rejection of respectfully traversed.

In actuality, Bender teaches away from the present invention and the arrangement of Tamagaki. More specifically, Bender teaches that a (preferred) printer stores all the print job data in a "non-volatile memory" so that when power is lost before a particular print job has been entirely printed, this fully buffered print job will remain in the non-volatile memory indefinitely until the power is restored. No other use of a non-volatile memory is disclosed or suggested in Bender. Thus, there is no problem of printing data being lost in the non-volatile memory of Bender and no need to issue a resend request to the host computers that sent the printing data. Clearly, if the arrangement of Tamagaki were modified in view of the teaching of Bender, Tamagaki would be modified to provide a non-volatile memory to receive all the print job data, negating the need for a resend request to be sent since none of the data will be lost due to any of the trouble conditions identified in Tamagaki.

Thus, claims 1-6, 9-13 and 15 are patentable over Tamagaki and Bender, considered alone or in combination.

Furthermore, Tamagaki does teach storing the host identification code and the data identification code in back-up storage section 65 which "functions" similar to a non-volatile memory since back-up power source 66 supplies back-up power thereto, keeping this storage section function when normal power is interrupted. However, the data storage

section 54 stores print data of only one print job since, as described at column 10, lines 9-12, the controller section 75 (of the host device) checks the digital copying machines 10 one by one and finds one which is not in use and has no trouble. Image data to be printed is then sent to this selected one. Thus, each digital copying machine will store image data to be printed for only one host since the host will not select a copying machine that is in use or has trouble.

In contrast, the volatile memory of the image forming apparatus of the present invention stores print data of a plurality of print jobs and when a normal state is restored, the print data of all the print jobs that are listed in the non-volatile memory and which are determined remain to be printed have the print data resent from the respective terminal device.

To expedite prosecution, independent claims 1, 9, 13 and 15 are amended to more clearly delineate this feature. In addition, claims 16 and 17 are submitted. Independent claim 16 recites, *inter alia*:

... a controller which, when power is restored to said volatile memory after being interrupted and the determining means determines that there are any print jobs that have not been printed, clears the respective image data address in the non-volatile memory prior to the image data being resent by the corresponding terminal device.

Neither Tamagaki nor Bender disclose or suggest such a controller for clearing a respective image data address in the non-volatile memory prior to the image data being resent by the corresponding terminal device. Thus, claim 16 is patentable over these references and its allowance is respectfully solicited.

CONCLUSION

Accordingly, it is urged that the application, as now amended, is in condition for allowance, an indication of which is respectfully solicited. If there are any outstanding issues that might be resolved by an interview or an Examiner's amendment, Examiner is requested to call Applicants' attorney at the telephone number shown below.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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CLAIMS WITH MARKINGS TO SHOW CHANGES MADE

1. (Amended) An image forming apparatus that performs printing based on data sent from an external terminal device via a network, comprising:

a non-volatile memory which stores print job processing status information of a plurality of print jobs;

determining means for determining, when the image forming apparatus has been restored to [its] a normal state, whether [there are] any of the plurality of print jobs [remaining] remain to be printed based on the print job processing status information stored in the non-volatile memory; and

resend request issuing means for requesting [a] the terminal device that sent data of [an outstanding] a respective print job to resend the data [when it is] for each of the plurality of prints jobs that it is determined [by the determining means that the outstanding print job exists] remains to be printed.

9. (Amended) An image forming system in which an image forming apparatus and a terminal device are connected via a network and the image forming apparatus executes printing based on data send from the terminal device, comprising:

said image forming apparatus including,

a non-volatile memory which [store the] stores print job processing status information of a plurality of print jobs,

determining means for determining, when the image forming apparatus has been restored to [its] a normal state, whether or not [there are] any of the plurality of print jobs

[remaining] remain to be printed based on the print job processing status information stored in the non-volatile memory, and

transmitting means for sending resend request information to request the terminal device that sent [the] print data of [an outstanding] a respective print job to resend [it when it] the print data for each of the plurality of print jobs that is determined [by the determining means that the outstanding print job exits] remains to be printed; and

said terminal device including,

receiving means for receiving the resend request information sent from the image forming apparatus, and

data resend means for resending said data in response to the receipt of said resend request information.

13. (Amended) A print resume method for an image forming apparatus to perform printing based on data sent from an external terminal device connected to it via a network, comprising the steps of:

storing [the] print job processing status information for a plurality of print jobs in a non-volatile memory;

determining, when the image forming apparatus has been restored to [its] a normal state, whether or not [there are] any of the plurality of print jobs [remaining] remain to be printed based on the processing status information stored in the non-volatile memory;

requesting the terminal device that sent [said] a respective print job data to resend [it when it] the data for each of the plurality of prints jobs that it is determined [by the determining means that there are print jobs remaining] remains to be printed; and

resuming printing based on the [resended] resent data sent from the terminal device.

15. (Amended) A print data transmission method for an image forming system in which an image forming apparatus and a terminal device are connected via a network, and printing is performed by said image forming apparatus based on print data sent from said terminal device, comprising the steps of:

 said image forming apparatus [including the] performing steps [of] including,
 storing [the] print job processing status information of a plurality of print jobs in a non-volatile memory,

 determining, when the image forming apparatus has been restored to [its] a normal state, whether or not [there are] any of the plurality of print jobs [remaining] remain to be printed based on the print job processing status information stored in the non-volatile memory, and

 sending resend request information requesting that the terminal device that sent [said] print job data of a respective print job to resend [it when it] the print job data for each of the plurality of print jobs that is determined [that there are print jobs remaining] remains to be printed; and

 said terminal device [including the] performing steps [of] including,
 receiving the print data resend request information sent from the image forming apparatus, and

 resending said data in response to the receipt of said resend request information.